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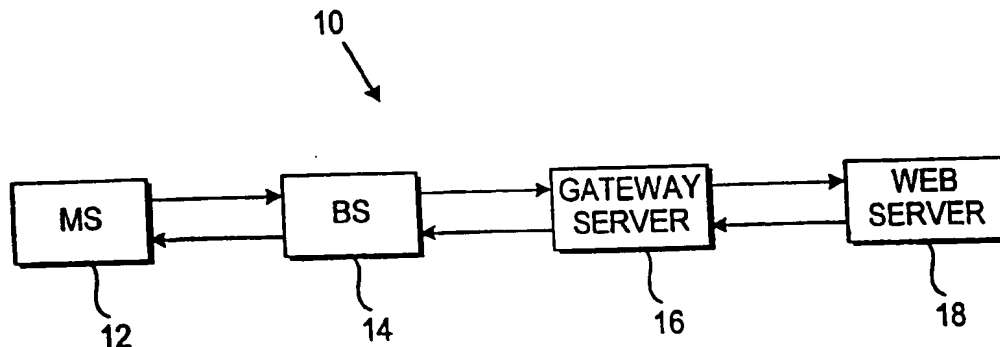
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(54) Title: SYSTEM AND METHOD FOR EFFECTIVE USE OF AIR LINK BETWEEN MOBILE STATIONS AND GATEWAY SERVERS



(57) Abstract: A method and system for minimizing data transmission between a mobile station and a gateway server. The method provides that a mobile station transmits to a gateway server a request for a content and/or a resource located on a web server using a first protocol. The gateway server then transmits the request to the web server using a second protocol that is compatible with that used by the web server. The gateway server receives a redirection message from the web server indicating a new location of the content and/or resource. In response to the redirection message, the gateway server creates and transmits another request for the content and/or resource. After receiving the requested content and/or resource from the web server or another web server, the gateway server transmits the requested content and/or resource to the mobile station using the first protocol.

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mobile terminals have features similar to those of desktop computer terminals, features such as, for example, the ability to access stock quotes, weather, and e-mail messages through the Internet. Typical mobile stations, however, have less powerful processors and memories than those of desktop terminals because they have severe size and power consumption constraints. The amount of data and the reliability of data transmission are also limited by the available spectrum, i.e., the radio resources allotted to the mobile station.

Prior art systems require the terminals including mobile stations to perform a variety of tasks while communicating with a web (or origin) server, much like the desktop terminals. Such tasks include processing of redirection messages from web servers, i.e., messages redirecting the "user agents" (e.g., web browsers) of the mobile stations to new locations to which the requested resources or contents have been moved. The location of a content or a resource on the Internet is identified by what is known as Uniform Resource Locator (URL), a global address of documents and resources on the World Wide Web. A URL has two parts, the first part specifying the protocol or scheme (e.g. HyperText Transfer Protocol (HTTP) or File Transfer Protocol (FTP)) used for fetching the content and the second part specifies the address or location of the content. Thus, for example, when a mobile station accesses a content that has been moved, the web server sends an HTTP redirection message to a gateway server indicating the new location of the requested content. The gateway server then sends a message encoded according to the Wireless Application Protocol to the mobile station through the wireless portion of the

request to the web server using a second protocol that is compatible with that used by the web server. The gateway server receives a redirection message from the web server indicating a new location of the requested content and/or resource. In response to the redirection message, the gateway server creates and transmits another request for the content and/or resource at the new location. After receiving the requested content and/or resource from the same web server or another web server, the gateway server transmits the requested content and/or resource to the mobile station using the first protocol.

Other objects and features of the present invention will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims. It should be further understood that the drawings are not necessarily drawn to scale and that, unless otherwise indicated, they are merely intended to conceptually illustrate the structures and procedures described herein.

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BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

Fig. 1 is a block diagram illustrating a system configured to operate in accordance with an embodiment of the invention; and

Figs. 2A and 2B are a flowchart describing the inventive steps performed by the embodiment of Fig. 1.

accessible by the mobile station 12, if authorized. As defined herein, the term "content" includes data stored or generated by a web server and typically displayed or interpreted by a user agent (e.g., a web browser); and the term "resource" includes routines (e.g. executable files), network data objects or services. Thus, a user, using an appropriate user agent, can access and retrieve contents and resources from a web server by simply specifying an appropriate URL. If, however, the user-specified URL for the requested content or resource has been moved to a new location, the web server 18 sends out a redirection message concerning the new location of the requested contents or resources. The new location may be referenced relative to a location specified in the original or a subsequent request, or may also be a complete URL containing a full path of the requested content or resource without referencing a location specified by a previous URL request.

Advantageously, the gateway server 18 is configured to send out new URL requests, on behalf of the MS 12, in response to the redirection message from the web server 18. Once the gateway server 16 receives the desired content or resource, the information is encoded and transmitted to the MS 12 together with the new location of the resource or content.

Figs. 2A and 2B are a flow diagram illustrating the steps to be performed by the preferred embodiment of the present invention. In step 100, the MS 12 sends a message, preferably coded using WAP, requesting a content or resource from the web server 18 through the gateway server 16. In step 102, the gateway server 16 transforms the request into a URL request using, for example, the HTTP scheme, and sends the message out to the web server 18. In step 104, the

therefore, to be limited only as indicated by the scope of the claims appended hereto.

4. The method of claim 1, wherein the first protocol of step (a) is based on the Wireless Application Protocol.

5. The method of claim 1, wherein the second protocol of step (b) is based on a World-Wide Web protocol.

6. The method of claim 5, wherein the second protocol is the HyperText Transport Protocol.

7. The method of claim 1, wherein the request is coded as a Uniform Resource Locator.

8. A system for minimizing data transmission between a mobile station and a gateway server, comprising:

a mobile station for transmitting a request for one of content and resource at a location using a first protocol;

a gateway server, connected to said mobile station, for receiving the request from said mobile station using the first protocol and for encoding and transmitting the request using a second protocol; and

a web server connected to said gateway server for storing at least one of content and resource, said web server receiving the encoded request from said gateway server and sending a redirection message to said gateway server indicating a new location of the requested one of content or resource, said gateway server receiving the redirection message and sending a request to the new location without communicating the redirection message to said mobile station, said gateway server accessing the requested one of content and resource from one of said web server and another web server in accordance with the new location and transmitting to said mobile receiver the requested one of content and resource.

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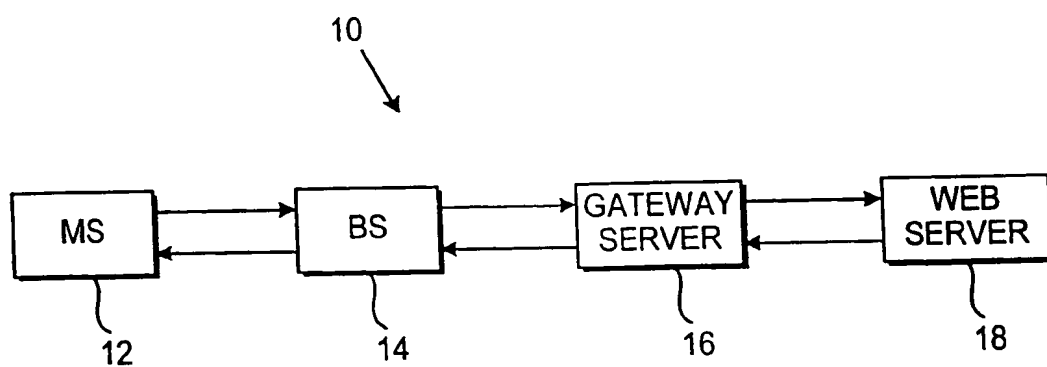


FIG. 1

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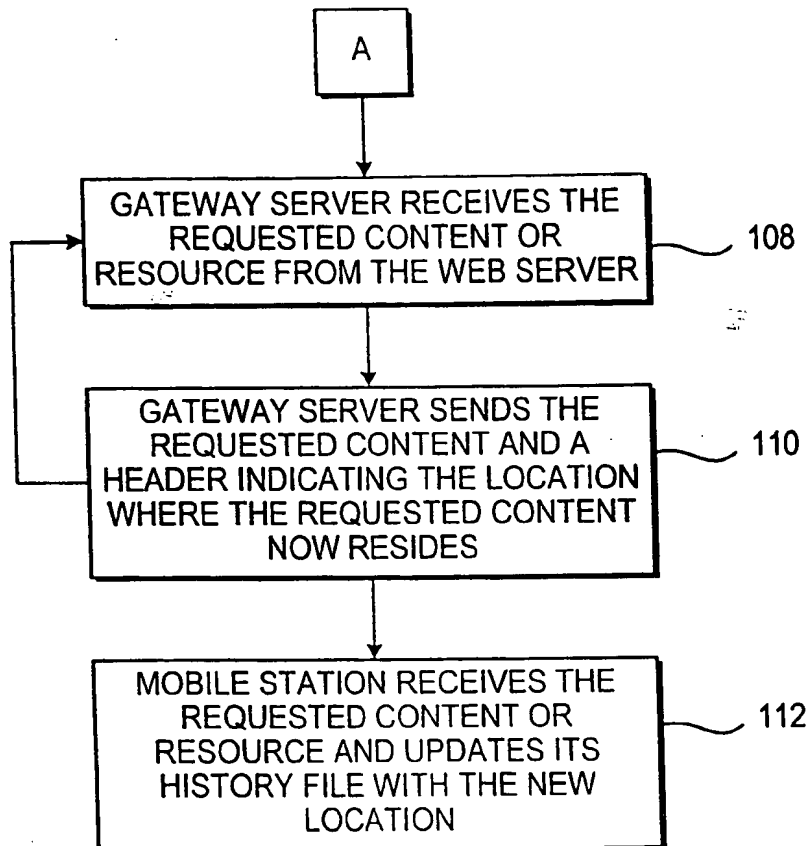


FIG. 2B